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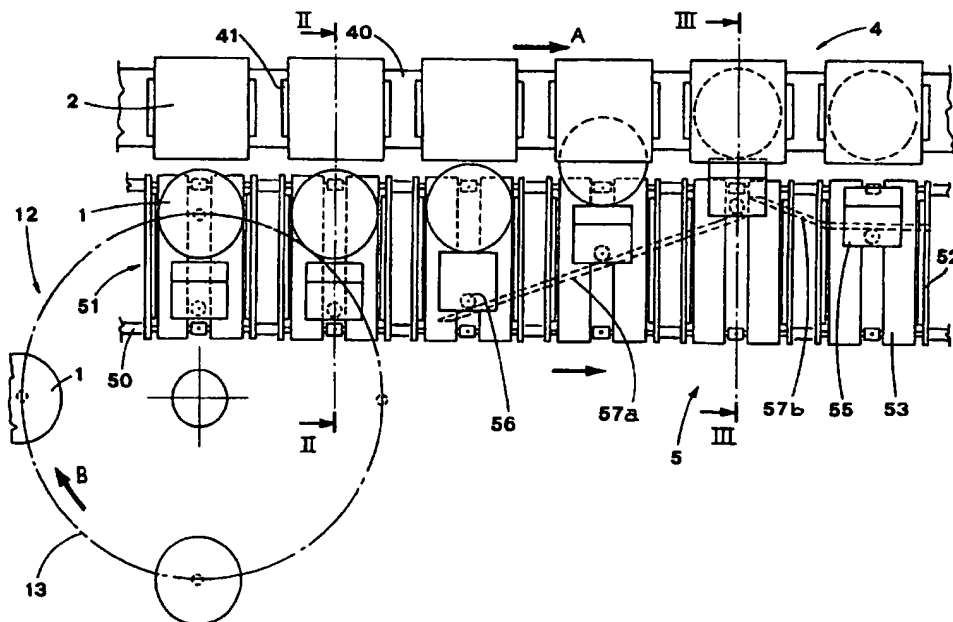
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(54) Title: A DEVICE FOR INTRODUCING ARTICLES INTO CONTAINERS



(57) Abstract: In a device for introducing articles (1) into containers (2) in a packaging machine, a first conveying line (4) for a series of containers (2) and an additional conveying line (5), are placed side by side and move in synchrony. The additional conveying line (5) is equipped with a plurality of drawers (51) for receiving articles (1). Each drawer (51) has a frame (52) fastened to conveying chains (50) of the additional conveying line (5), and the frame (52) carries transporting belts (53), which receive the articles (1) and move horizontally crosswise to the additional conveying line (5). The transporting belts (53) feature pushing means (55) for pushing the articles (1) into the containers (2).

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A DEVICE FOR INTRODUCING ARTICLES INTO CONTAINERS**TECHINICAL FIELD**

The present invention relates to a device for introducing
5 articles into relative containers.

BACKGROUND OF THE INVENTION

Various articles are packaged into containers such as cases, boxes and the like by automatic machines.

10 Typically, these automatic machine include a first line for conveying a series of containers and an additional conveying line for transporting the articles to be packaged. The additional line is situated beside the first conveying line and moves in synchrony therewith.

15 The additional conveying line has a plurality of drawer devices for receiving the articles.

Pushing means are joined with the drawer devices for moving the articles into the containers during forward motion of the lines.

20 The use of automatic machines incurs a risk of damages to the articles, e.g. caused by rubbing or the like.

Obviously, this risk becomes particularly relevant in case the articles are fragile or delicate and can be easily damaged by rubbing.

25 Actually, the articles are handled many times during various working steps of the packaging machine, during taking the articles out of a magazine, and especially during introduction into the containers.

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During these operations, a sensitive surface of the articles can rub against means provided for transferring them.

5 **SUMMARY OF THE INVENTION**

The object of the present invention is to solve the above problem by proposing a device which allows introduction of articles into relative containers, ensuring high working speed and avoiding any damaging of the articles.

- 10 Another object of the present invention is to propose a device with a simple structure, reliable and versatile.

The above mentioned objects are obtained by a device, realized according to the present invention, for introducing articles into containers, in a packaging
15 machine including a first line for conveying a series of containers and an additional conveying line disposed beside the first conveying line and moving in synchrony therewith. The additional line has a plurality of drawer devices for receiving the articles to be packaged.

- 20 The proposed device is characterized in that the drawer devices include a frame fastened to moving means of the additional conveying line.

The frame supports conveying means aimed at receiving the articles and moving crosswise to the additional conveying
25 line.

The conveying means supported by the frame feature pushing means, which move the articles into the containers.

BRIEF DESCRIPTION OF THE DRAWINGS

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Particular features of the present invention will become evident from the detailed description of a preferred embodiment of the device for introducing articles into containers, illustrated as example in the enclosed Figures,
5 in which:

- Figure 1 is a schematic plan view of the device for introducing articles into containers;
- Figures 2 and 3 are cross section views of the proposed device, taken along the planes II-II and
10 III-III of Figure 1, respectively;
- Figure 4 is a lateral view of a drawer device of said line for conveying articles to be packaged.

BEST MODE OF CARRYING OUT THE INVENTION

15 With reference to the above figures, reference numeral 1 indicates articles to be packaged into containers 2.

The containers 2 are fed one by one to a conveying line 4, along which the containers 2 are moved forward. The containers are orderly placed into receiving seats,
20 delimited by pairs of lugs 41.

The conveying line 4 includes a conveying belt 40, driven, by known, not shown motor means, to move in a continuous way, in the direction indicated with the arrow A. The lugs 41 are fastened crosswise to the conveying belt 40.

25 The articles 1 to be introduced into the containers 2 are taken from a magazine, not shown, by a distributing device 12, which transfers the articles 1 to an additional conveying line 5, situated beside the first conveying line 4 for the containers 2. The additional conveying line 5 is
30 drive in synchrony with the container conveying line 4, in the same direction and with the same speed.

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The distributing device 12 includes a plate 13, rotating on a vertical axis and carrying, situated on its edge, a plurality of holding groups, which take single articles 1 and transfer them to the additional conveying line 5.

- 5 The plate 13 is driven into rotation in the direction indicated with the arrow B, in phase relation with the movement of the additional conveying line 5.

The additional conveying line 5 includes conveying means 50, e.g. a chain. A plurality of drawer devices 51 are
10 fastened to the chain by coupling means 61. The drawers 51 receive single articles 1 and introduce them into the containers 2 during forward motion of the conveying lines.

Each drawer 51 includes a frame 52, whose base is fastened to the chain conveying means 50.

- 15 The frame 52 carries a pair of side by side transporting belts 53 trained around a relative pair of wheels 54, whose axes lies in the length direction of the additional conveying line 5.

The frame 52 is substantially formed by a pair of side
20 walls 59, fastened by a pair of shafts 58, which define the axes on which the wheels 54 of the conveying belts 53 rotate.

A pushing member 55 is fastened to the conveying belts 53 and acts on the article 1 to be packaged, so as to
25 introduce it into a container 2.

The pushing member 55 carries, in its lower part, a roller 56, rotating freely on a vertical axis, and engaging a longitudinal cam 57 aimed at driving the pushing member 55 to move crosswise to the line 4.

- 30 More precisely, as seen in Figure 1, the cam 57 features a rear portion 57a, which moves the pushing member 55 toward

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the line 4 for conveying the containers 2, and a fore portion 57b, which moves the pushing member 55 in the opposite direction.

5 The roller 56 supporting pin 60 passes through the space left free between the two side by side conveying belts 53.

The functioning of the device is easily understandable from the above description.

10 The articles 1 to be packaged are fed to respective drawers 51 of the additional conveying line 5 and positioned on the conveying belts 53 joined to the drawers.

The pushing member 55, operated by the rear portion 57a of the cam 57, drives the transporting belts 53, which moves the article 1 toward a corresponding container 2 transported by the first conveying line 4.

15 The introduction of the article 1 into the container 2 is completed by the pushing member 55, which acts on the rear part of the article 1.

20 It is to be pointed out that during this phase, the article 1 is moved by the conveying belts 53, to which the pushing member 55 is integral, without any rubbing.

Therefore, the proposed device achieves the object of introducing articles into containers ensuring high working speed and without damaging the articles.

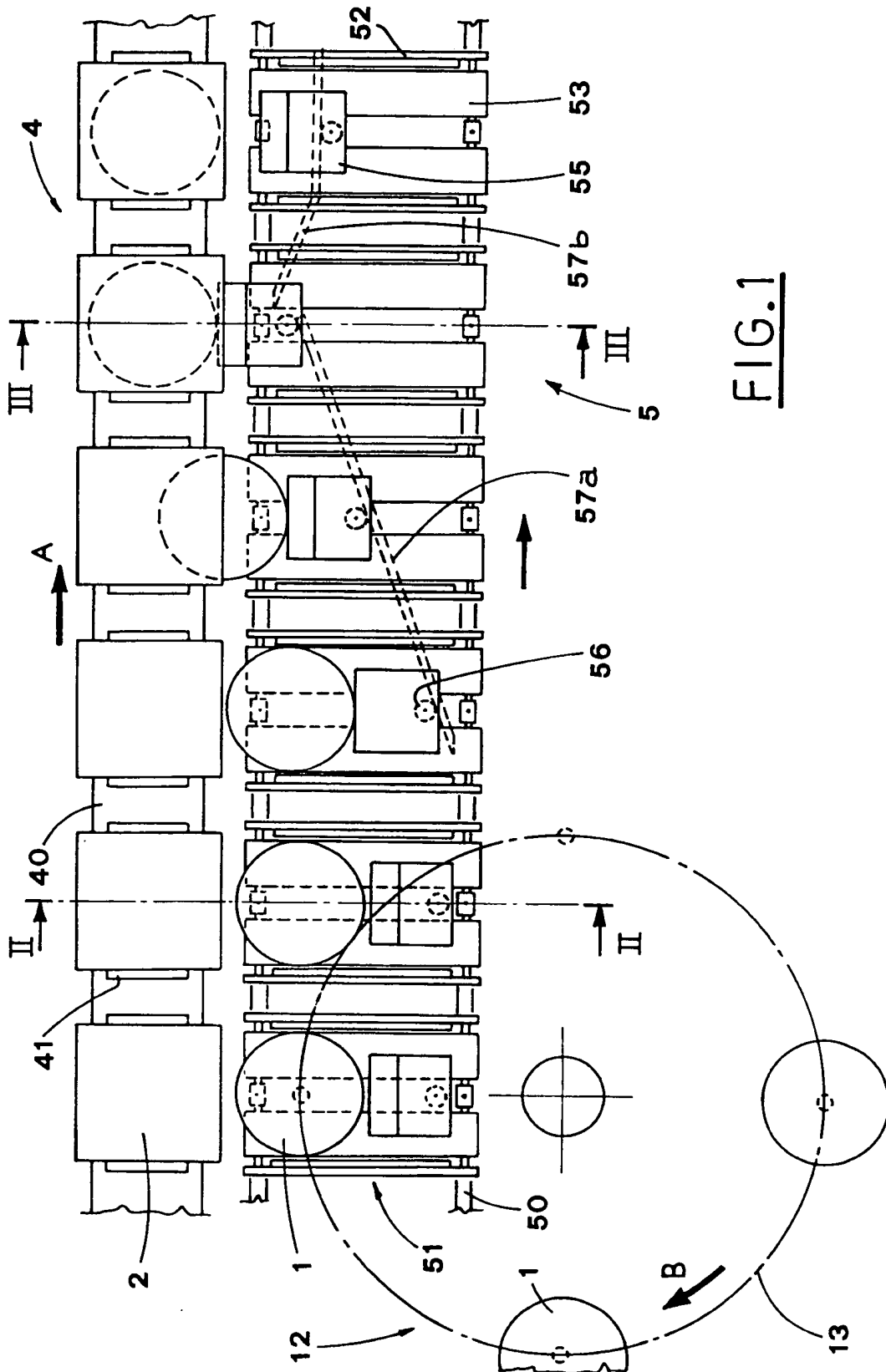
CLAIMS

1. A device for introducing articles into relative containers, in a packaging machine including:
- 5 a first conveying line (4) for transporting a series of containers (2), and an additional conveying line (5), for transporting said articles, said additional conveying line (2) being located beside said containers conveying line and moving in synchrony with the container conveying line;
- 10 a plurality of drawers (51) associated to said additional conveying line (5) for receiving respective articles;
- a frame (52) for each of said drawers (51), said frame being fastened to said additional conveying line (5);
- 15 transporting means (53) for each of said frame (52) for receiving articles (1), said transporting means (53) moving crosswise to said additional conveying line (5);
- pushing means (55) fastened to said transporting means for pushing said articles (1) into said containers (2);
- driving means for said transporting means (53).
- 20
2. A device as claimed in claim 1, wherein said driving means include:
- a roller (56) fastened to said pushing means (55) and rotating freely on a vertical axis;
- 25 a cam (57) extending longitudinally with respect to said first conveying line (4), said longitudinal cam (57) engaging said roller (56) and driving said pushing means (55) into translation crosswise to said additional conveying line (5).

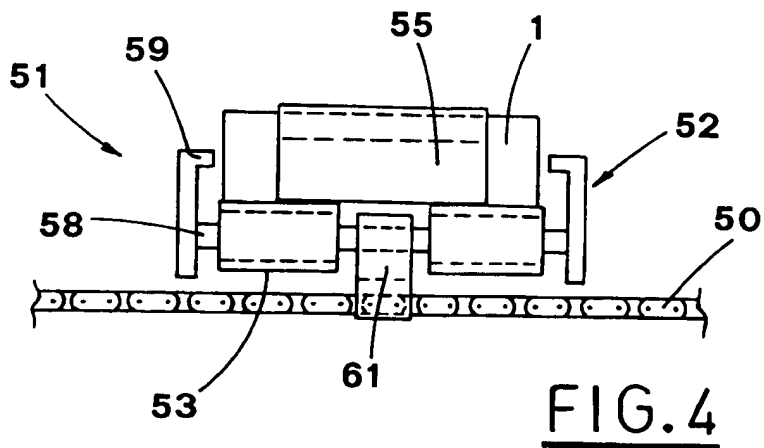
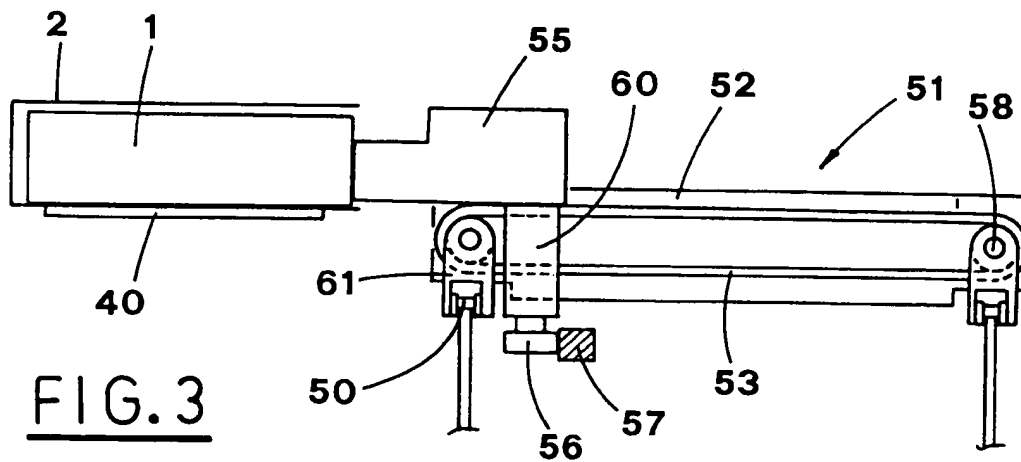
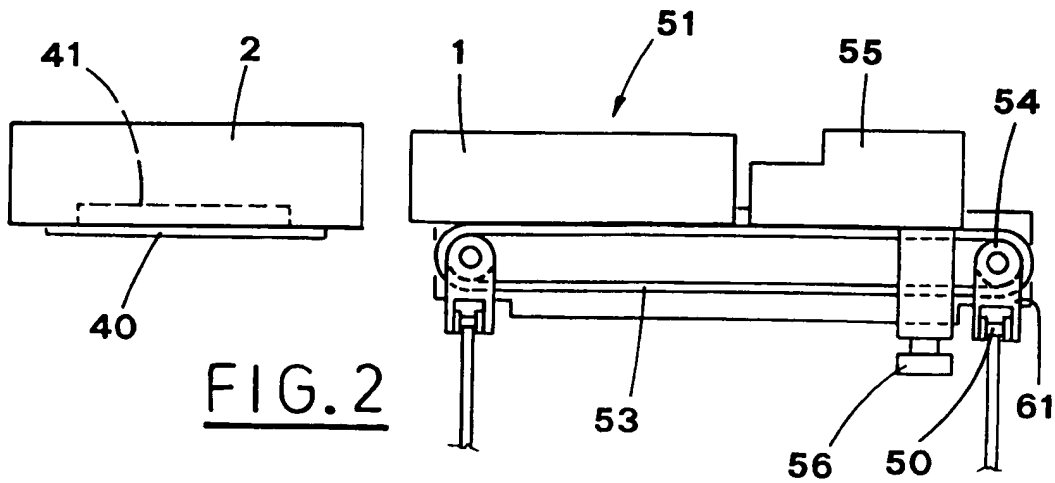
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3. A device as claimed in claim 2, wherein said cam (57) includes a rear portion (57a), which moves said roller (56) and pushing means (55) toward said container conveying line (4), and a fore portion (57b), which moves said roller (56) and said pushing member (55) away from said container conveying line (4).
4. A device as claimed in claim 1, wherein said transporting means (53) for receiving said articles (1), include a pair of side by side conveying belts (53) trained around a respective pair of wheels (54) having rotational axes (58) laying longitudinal to said additional conveying line (5).
5. A device as claimed in claim 1, wherein said additional conveying line (5) includes a pair of side by side chains (50).

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INTERNATIONAL SEARCH REPORT

national Application No.

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65B35/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B65B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR 2 493 806 A (THIMON ETS) 14 May 1982 (1982-05-14)	1,2,5
Y	page 9, line 28 -page 10, line 31; claims; figure 10	3
Y	EP 0 244 231 A (THIELE ENG CO) 4 November 1987 (1987-11-04) page 4, line 3 -page 6, line 11; figures	3
A	US 3 906 705 A (BECK CHARLES C ET AL) 23 September 1975 (1975-09-23)	
A	EP 0 765 810 A (AZIONARIA COSTRUZIONI) 2 April 1997 (1997-04-02)	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Information on patent family members

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